A shop-built curved-top dormer is set with a crane. The opening in the roof has been sheathed over to guard against weather, and it will be cut out after the dormer is in place.

Building Curved Dormers

Standard dormer framing with a little carpentry finesse can create distinctive arched dormers

by Bob Gramp

Once in a while you get a chance to do something really nice. Except for a stint during a regional recession a few years ago, I've always worked on referrals. Customers typically wait a year or more until I can get to them. But even though most of my work is custom, high-end construction, the project that called for these arched dormers required the kind of creativity that keeps carpentry interesting.

The architect had drawn elevations showing the arched dormers, but my son Doug and I had to work out the details of the framing and finishing. The big arched dormers we framed on site, but we built two small dormers in the shop and put them in place with a crane.

The Roof Opening

Framing any dormer starts with heading off an opening in the roof. The roof openings for the curved top dormers weren't much different than the standard "doghouse" dormer opening, even with a slate roof. For headers we used 2x12 Microlams, but instead of nailing these together into a sandwich, we staggered them, bumping one up higher on the roof than the other to conform to the 16/12 roof slope (see Figure 1). The roof is a hip roof, with a 12-foot long, 16-inch Microlam ridge beam and 16-inch hip rafters, so much of the load is transferred through the hip rafters rather than down the commons on the ridge side of the dormers. A single 2x10 heads off the rafter tails on the down slope side of the dormer.

For the big dormers, of course, we doubled our 2x10 rafters on either side of the opening. The openings were only 66 inches wide, rafter to rafter, and 7 feet 6 inches measuring along the diagonal. In between dormers, we had a 6-foot-wide section of common rafters carrying the load from the ridge down onto the plate.

The small dormer openings measured about 32 inches wide. Because we were going to build the little dormers on the ground and install them by crane, we went ahead and framed in the dormer opening, but we covered the opening with sheathing and black

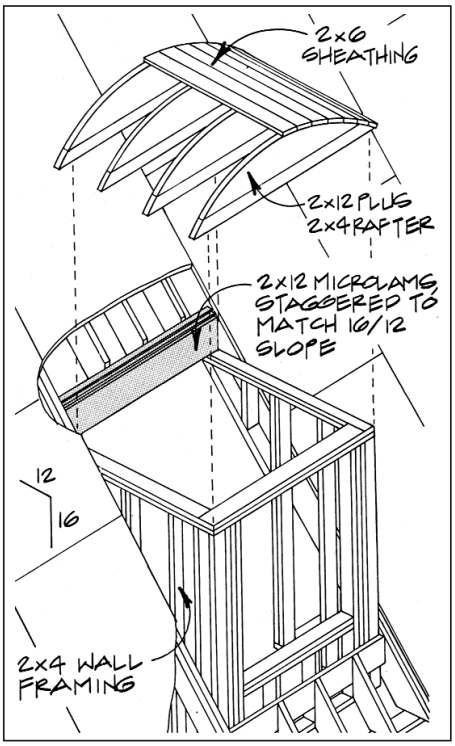

Figure 1. *For headers across the openings of the big dormers, the author used two 2x12 Microlams. He staggered them to conform to the 16/12 roof slope.*

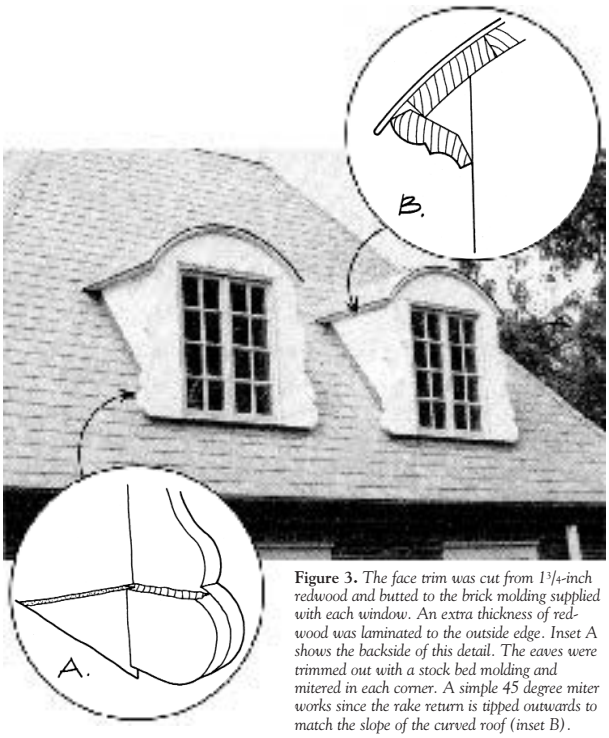

Figure 3. *The face trim was cut from 1¾-inch redwood and butted to the brick molding supplied with each window. An extra thickness of redwood was laminated to the outside edge. Inset A shows the backside of this detail. The eaves were trimmed out with a stock bed molding and mitered in each corner. A simple 45 degree miter works since the rake return is tipped outwards to match the slope of the curved roof (inset B).*

paper to protect it. We cut out the sheathing after the dormers were in place. Also, the small dormers are only visible from the attic so we didn't have to worry about interior trim.

Building the Big Arched Dormers

We used a saber saw to cut the rafters for the large dormer from 2x12s, using a radius of 60 inches. We filled in below with 2x4s cut on each end to the same radius (see Figure 2). For roof sheathing we used spruce 2x6s, laid like barrel staves over the curved rafters. Spruce is more flexible than Douglas-fir and the planks had to be cupped slightly to conform to the rafters. In this case, we found that hand nailing with 16d sinkers worked better than our pneumatic nailer for pulling the boards down.

Each arch has two 2-inch vent holes drilled in it, and these provide ventilation for the dormers; they're connected to the main attic which is also ventilated.

Sidewalls were framed with 2x4 studs and 2x4 top and bottom plates. The outside was sheathed with 5/8-inch OSB sheathing.

Because we intended to use insulation above the ceiling, we finished the inside with a flat ceiling. The windows right below the ceiling in these large dormers are Marvin casements. Because they don't have an arched top, the interior trim was simple.

What gives the dormers their distinctive look is the exterior trim, which wasn't that difficult to do. We used 1¾-inch redwood to trim out the sides and top of the face. We used a band saw to cut the "harp" profile, and once we had cut these pieces of trim, we put them up right next to the standard brick mold provided by Marvin, as shown in Figure 3. The redwood trim projected out about ½ inch beyond the brick mold around the windows, making it practically disappear. The trim was secured to the studs with 3-inch galvanized flat-head screws. On the outer edges, we laminated an extra thickness of 1¾-inch redwood to the face with an exterior sign glue to give us material that was 3½ inches thick. In essence, the trim wraps around the corner, and there we cut out a ¾-inch notch to leave room for the stucco. By leaving room for the stucco to go behind the trim, we'll give ourselves a nice place to put a bead of caulk.

Figure 2. *Two-by-fours were added to the bottom edge of each 2x12 curved rafter. Note the 2-inch vent holes drilled in each rafter to provide ventilation into the main attic.*

The other decorative detail that we used was a bed molding along the roof line. The radius of the large dormer was shallow enough that we could bend a stock 1¾-inch bed molding along the curve on the face of the dormer. The corners were cut at 45° and the molding along the rake was tipped to the slope of the curve, as shown in Figure 3.

Making the Small Dormers

The small dormers are less than the height of a person, so it was easier to do all the work in the shop.

My son Doug did most of the work on the small dormers, using the tools in my shop. We have a 14-inch band saw, a power sander, table saw, and routers, but I would describe my shop as more like that of a home hobbyist. We don't have a huge investment in expensive power tools, and I would think that any carpenter with patience could use standard tools to build such a dormer.

We framed the dormer the same way we framed the larger dormer, using 2x12 stock for the arched rafters. The small dormer has an 18-inch radius, and its contours match the round-top window supplied by Marvin. If this window were going to be visible from the inside, we would have trimmed it out with the trim supplied by Marvin. They bend and laminate their trim stock to give it the arched profile, then they run it through a shaper.

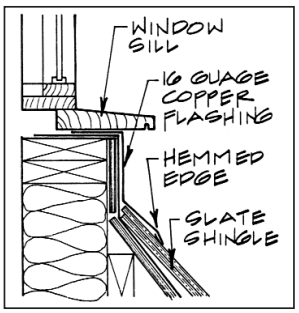

Figure 4. *Copper flashing was installed beneath the window sill along each dormer. The bottom edge was hemmed over so it would lie flat across the slate shingles.*

These little 300 pound dormers were set with a crane. Prior to placing the dormers, we had nailed a 2x4 across the roof to hold the dormer in place temporarily. We used fifteen 3-inch galvanized deck screws to secure it permanently. Deck screws are a marvelous invention. They aren't tapered, so once driven in, they don't pull out. With the copper flashing locked into the slate, the dormer won't budge.

Roofing and Flashing

Copper roofing and flashing provided a quality touch to the dormers. The roofing was 16 gauge copper over 30# felt. We used a flat-seam roof that overlapped the bed mold ¾ inch. We used copper step flashing where the dormer joins the roof. Stucco goes over the step shingles so we don't need counterflashing.

One nice finishing touch on the dormer flashing was the horizontal apron below the window. The roofer carried the flashing over the studs in the dormer wall, but provided a hemmed edge where the apron overlaps the slate (see Figure 4). This keeps the metal straight, even though the slates beneath are irregular. ■

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